Remarks/Arguments

Applicants have received and carefully reviewed the Office Action of the Examiner mailed April 9, 2010. Currently, claims 38-58 remain pending and have been rejected. Claims 38-58 were rejected on the ground of nonstatutory obviousness-type double patenting as unpatentable over claims 1-34 of U.S. Patent No. 6,217,589; over claims 1-29 of U.S. Patent No. 6,402,761; and over claims 1-37 of U.S. Patent No. 6,814,740. Claims 38-58 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as unpatentable over claims 38 and 40-53 of copending application 10/957,685 (U.S. Published Patent Application No. 2003/0096668). Applicant notes that the three terminal disclaimers that accompanied the communication of December 17, 2009 made reference to the wrong application serial number and were not entered in the current application file. Accordingly, the request to withdraw the terminal disclaimers, filed in error, appears to be moot. Favorable consideration of the following remarks is respectfully requested.

Regarding the Response to Arguments, Applicant respectfully disagrees with the Examiner's statements regarding the lack of a known process which would allow a precursor alloy to a superelastic material to be made into a core wire through simple machining or material removal, which does not involve cold working.

Initially, it is desirable to describe what is meant by the term "cold working". A query to http://en.wikipedia.org/wiki/Cold_work performed on April 23, 2010 produced the following description of the term:

> "Work hardening may be desirable or undesirable depending on the context. An example of undesirable work hardening is during machining when early passes of a cutter inadvertently work-harden the workpiece surface, causing damage to the cutter during the later passes. An example of desirable work hardening is that which occurs in metalworking processes that intentionally induce plastic deformation to exact a shape change. These processes are known as cold working or cold forming processes. They are characterized by shaping the workpiece at a temperature below its recrystallization temperature, usually at the ambient temperature.[3] Cold forming techniques are usually classified into four major groups: squeezing, bending, drawing, and shearing."
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> (The cited reference is Degarmo, E. Paul; Black, J T.; Kohser, Ronald A. (2003), Materials and Processes in Manufacturing (9th ed.), Wiley, ISBN 0-471-65653-4, page 375.)

For the purpose of this discussion, the pertinent information is that "cold working" or "cold forming" requires *plastic deformation* to exact a shape change, a process characterized by shaping the workpiece at a temperature below its recrystallization temperature. As noted, the techniques which introduce plastic deformation may be classified into four groups: squeezing, bending, drawing, and shearing. Accordingly, processes which do not introduce plastic deformation do not constitute "cold working". Chemical etching (for example, U.S. 6,663,558; col. 17, lines 19-20); photochemical etching (U.S. Patent No. 6,663,558, col. 17, lines 19-21); or "Electrochemical micromachining of nitinol by confined-etchant-layer technique", Xin-Zhou Ma, Li Zhang, Guo-Hui Cao, Yu Lin and Jing Tang, Electrochimica Acta, Volume 52, Issue 12, 10 March 2007, Pages 4191-4196.) remove material without introducing plastic deformation and these processes are known in the literature.

Nitinol is well known to exist in three crystal modifications as well as an amorphous form. Twinned martensite is soft and readily deformed, Stress-induced martensite, the superelastic de-twinned form, may be created by stress applied above A_f. Austenite is responsible for the shape memory effects. Amorphous Nitinol, which is neither martensitic nor austenitic, may be prepared by a variety of techniques including sputtering, vapor deposition, and ion beam assisted deposition, with or without a fine wire mandrel. (U.S. 6,938,668) The amorphous material thus produced requires additional thermomechanical processing to become martensitic and/or austenitic depending on the processing, thereby possibly acquiring superelastic and/or shape-memory properties associated with those structures.

Thus it is known in the literature, including the patent literature, to produce Nitinol articles which are precursors to superelastic materials which are not necessarily pseudoelastic materials. The Examiner's knowledge not withstanding, it is known that Nitinol may be produced in wire form through processing which does not involve the plastic deformation which results from cold working. Indeed, the Examiner's lack of knowledge of the materials and processes may be taken as indicative of the novelty of the claimed invention. Accordingly, Applicants repeat their assertion that as far as can be determined, there is nothing in the language of the claims of the three issued patents that require cold-working and have provided evidence that precursors to superelastic materials which are not necessarily pseudoelastic materials are known and further that processes to remove material which do not require cold-working (categorized as one of squeezing, bending, drawing, and shearing processes) are also known.

In view of the foregoing, all pending claims are believed to be in condition for allowance. Further examination, reconsideration, and withdrawal of the rejections are respectfully requested. Issuance of a Notice of Allowance in due course is anticipated. If a telephone conference might be of assistance, please contact the undersigned attorney at (612) 677-9050.

Respectfully submitted,

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